

REMARKS

I. Introductory Comments

Claims 1-35 and 46-50 are pending in the Subject Application; claims 1, 10, 18, 26 and 50 are independent claims. Claims 8-9, 16-17, 24-25 and 34-35 are currently withdrawn. Therefore, claims 1-7, 10-15, 18-23, 26-33 and 46-50 are currently under examination on the merits.

In the pending Office Action, claims 1-7, 10-15, 18-23, 26-33 and 46-50 stand rejected under 35 U.S.C §103(a) as allegedly being unpatentable over U.S. Patent No. 5,766,366 to Ferguson et al. ("Ferguson") in view of U.S. Patent No. 4,407,955 to Muller et al. ("Muller").

Applicant respectfully traverses the rejections, and requests reconsideration and withdrawal of the rejections and allowance of the pending claims. Applicant addresses the rejections as follows.

II. Claim Rejections under 35 U.S.C. §103(a)

The pending claims are non-obvious in view of Ferguson and Muller for at least the following reasons: 1) Ferguson and Muller fail to teach or suggest the compositions recited in the present claims; 2) there is no reasoning with rational underpinnings based on a preponderance of factual evidence to support the reference modifications asserted by the Office to arrive at the present claims; and 3) Ferguson and Muller fail to teach or suggest the processing parameters set forth in the Subject Application and recited in the present claims.

1. The cited references fail to teach or suggest all of the features of the compositions recited in the present claims.

Independent claims 1, 10, 18, and 50 each recite "An acid modified dry-milled starch composition."¹ The term "dry-milled starch" is clearly defined in the specification of the Subject Application at paragraph [0021]:

[0021] As used herein the term "dry-milled starch" refers to the flour product of a processed raw grain in the substantial absence of liquid, as compared to the pure starch of a wet milled cereal grain.

This definition explicitly describes the substantial differences between wet-milled starch (as disclosed in Ferguson) and dry-milled flour products of processed raw grains (as recited in the present claims).

The fact that Applicant has chosen to designate dry-milled flour products of processed raw grains as "dry-milled starch" in certain claims is irrelevant because an applicant may be their own lexicographer. See MPEP §2111.01.IV, citing *In re Paulsen*, 30 F.3d 1475, 1480, 31 USPQ2d 1671, 1674 (Fed. Cir. 1994) (an applicant may define specific terms used to describe their invention if the definition is reasonably clear, deliberate, and precise"). Indeed, where an explicit definition is provided by an applicant for a term, that definition will control interpretation of the term as it is used in the claims. See *Toro Co. v. White Consolidated Industries Inc.*, 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999) (meaning of words used in a claim is not construed in a "lexicographic vacuum, but in the context of the specification and drawings").

A person having ordinary skill in the art clearly recognizes the fact that the dry-milled starch (i.e., flour) compositions disclosed in the Subject Application and the starches disclosed in Ferguson are distinct materials. Starch is a polysaccharide carbohydrate material consisting of glucose monosaccharide units linked together by glycosidic bonds. Chemically, starch is a pure material consisting essentially of

¹ Independent claim 26 recites "An acid modified dry-milled flour composition."

polysaccharide molecules. In contrast, in the present context, flour is a particulate mixture produced by grinding or milling grains or other vegetative materials. Accordingly, flour may comprise, *inter alia*, ash, starch, oils/fats, proteins, and insoluble fibers.

It is clearly evident that Ferguson is directed to processes involving purified starch materials derived from wet-milled grains (column 2, lines 16-60, describing various base starches in terms of specific molecular structure (i.e., amylopectin, amylose, and chemically derivatized versions thereof)). A person having skill in the art knows that wet-milling processes are generally designed to isolate pure starch from the other components of whole-grain materials. See, e.g., Muller at column 2, lines 18-21 ("Wet milling processes typically remove all but an insignificant amount of non-starch materials, i.e., protein, cellulosic fiber and oil, from the starch component of the grain. . . ." (emphasis added)).

In contrast, the present claims recite a flour product (i.e. a "dry-milled starch") of a processed raw grain in the substantial absence of liquid, as compared to the pure starch of a wet-milled grain. The materials produced from the Ferguson process are therefore compositionally distinct from the materials recited in the present claims. Thus, it is clear that Ferguson cannot teach or suggest acid modified dry-milled starch compositions as set forth in the present claims.

Moreover, the Muller reference does not remedy the clear deficiencies of the Ferguson reference. Muller discloses a process for converting the starch fraction derived from dry-milled cereal grain into a sterile aqueous solution of fermentable sugar (i.e. monosaccharide). The process disclosed in Muller comprises the steps of hydrolyzing an aqueous slurry of the starch fraction derived from dry-milled cereal grain, separating any protein and oil from the starch hydrolysate, and further hydrolyzing the resulting purified starch to provide an aqueous solution of fermentable glucose (column 4, lines 5-64). Muller expressly discloses removing "the protein, oil and/or fiber from the partial hydrolysate prior to subjecting the latter to final hydrolysis" to produce fermentable glucose (column 5, lines 4-7). Thus, Muller discloses a process for

isolating and purifying glucose from the starch fraction of cereal grains. Muller does not disclose using a raw flour, only the starch fraction derived from dry-milled cereal grain.

The Office asserts that “it would have been obvious to one of ordinary skill in the art at the time of the invention by applicant to use a dry mill [sic] starch in the Ferguson et al. process, motivated by the fact that Muller et al., also drawn to starch treatment, disclose [sic] that starch made from dry mill process [sic] is cheap and economic.” However, this assertion ignores the technical disclosure in both Ferguson and Muller. Ferguson discloses a process that produces thinned pure starches from a wet-milling process. Muller discloses a process that produces isolated and purified glucose from the starch fraction of cereal grain. Both references are directed to producing isolated and purified carbohydrate compositions as the end products of the respective processes.

In direct contrast, as explicitly set forth in the Subject Application, the acid modified dry-milled starch compositions recited in the present claims are “the flour product of a processed raw grain” (emphasis added). As such, the flour products recited in the present claims are not isolated and purified carbohydrate compositions like the compositions disclosed in Ferguson and Muller, but rather, contain additional components, such as, for example, fat/oil and protein. Ferguson and Muller are directed away from flour compositions, and therefore, the reference combination cannot teach or suggest acid modified dry-milled starch compositions as set forth in the present claims.

2. There is no reasoning to support the reference modifications asserted by the Office.

The key to supporting any rejection under 35 U.S.C. §103(a) is the clear articulation of the reason why the claimed invention would have been obvious to a person having ordinary skill in the art at the time of the invention. See, e.g., *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, 82 USPQ2d 1385, 1396 (2007) (the analysis supporting a rejection under 35 U.S.C. §103(a) must be made explicit).

Rejections on obviousness grounds cannot be sustained with mere conclusory statements; instead, there must be an articulated reasoning with rational underpinnings based on a preponderance of factual evidence to support the legal conclusion of obviousness. See MPEP §2141; *In re Oetiker*, 977 F2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

In essence, in order to arrive at the compositions recited in the present claims, the Office asserts that it would have been obvious to a person having skill in the art to substitute raw dry-milled flour for the purified starch material utilized as the feed to the process disclosed in Ferguson. However, the Office has failed to provide any reason, other than an alleged economic benefit, why a person having skill in the art would make the asserted modification. The fact that dry milling may be cheaper than wet milling is a clearly insufficient rationale for modifying the reference teachings, especially where the modification would radically change the processes and compositions disclosed in the primary reference.

In the present matter, the fact that dry milling may be cheaper than wet milling is irrelevant because Ferguson is entirely directed to starch and starch processing. Specifically, the Ferguson process is directed to "dry thinned starches . . . produced by continuously feeding a mixture of a base starch and a chemical which hydrolyses the glycosidic linkage of starch to a plug flow reactor, passing the mixture through the reactor, recovering the mixture and neutralizing the mixture" (column 1, lines 18-22). The feed to and product from the Ferguson process is a starch (i.e. a carbohydrate having glycosidic bonds). In contrast, in addition to carbohydrate, flour comprises oil/fat and protein. These non-carbohydrate flour components would have no purpose in the Ferguson process. Thus, there is no reason to use flour in the Ferguson process. In fact, Applicant respectfully submits that any purported reason to use flour in the Ferguson process is based on an improper hindsight reconstruction of the present claims and necessarily takes into account knowledge which was not within the level of ordinary skill at the time the claimed invention was made.

The present inventors discovered that processing flour (i.e., dry-milled starch) according to the steps disclosed in the Subject Application produces a novel and inventive acid modified flour having the properties recited in the present claims. The cited references, alone or in combination, fail to disclose or suggest compositions having these features. Consequently, the present claims are non-obvious and in condition for allowance.

3. The cited references fail to teach or suggest the processing parameters set forth in the Subject Application.

In the Office Action, the Office asserts that the starch composition disclosed in Ferguson is prepared in a substantially similar manner as that of the present claims, and therefore, the starch composition in Ferguson would be expected to have the same properties as the compositions recited in the present claims. However, this assertion is incorrect.

Referring to paragraphs [0039] and [0040] in the Subject Application, the processes used to produce the acid modified compositions recited in the present claims utilize an appropriate amount of acid which may be based, in part, on the fat content of the base dry-milled flour. Ferguson and Muller, alone or in combination, do not disclose or suggest an acid to fat relationship as a processing parameter. In fact, as discussed above, Ferguson and Muller exclude oil/fat content from the disclosed carbohydrate materials, and thus are incapable of being processed according to an acid to fat relationship. Thus, because the materials disclosed in Ferguson and Muller are distinct from the compositions recited in the present claims, the materials disclosed in Ferguson and Muller cannot be processed in a similar manner as the compositions recited in the present claims. Indeed, contrary to the assertions made by the Office, a person having ordinary skill in the art readily recognizes that the significant compositional differences preclude similar fat, protein, and viscosity profiles.

The Office also asserts that “[i]f there are any difference [sic], the difference [sic] must be minor and obvious.” Initially, Applicant notes that “[i]n

determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious." MPEP §2141.02.I, citing *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983). Notwithstanding, after consideration of all the facts, the differences between the content of Ferguson in view of Muller and the present claims are of such magnitude as to render the claims non-obvious to a person having ordinary skill in the art." MPEP § 2141.III.

III. Conclusion

For at least the reasons set forth above, pending claims 11-7, 10-15, 18-23, 26-33 and 46-50 are non-obvious in view of the references cited in the pending Office Action. Accordingly, withdrawal of the rejection of claims 1-7, 10-15, 18-23, 26-33 and 46-50 under 35 U.S.C. §103(a) is respectfully requested. Applicant submits that the Subject Application is presently in condition for allowance and requests favorable reconsideration and the issuance of a Notice of Allowance. If it would expedite prosecution, the Examiner is encouraged to contact the undersigned representative by telephone.

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Date

K&L GATES LLP
Henry W. Oliver Building
535 Smithfield Street
Pittsburgh, Pennsylvania 15222-2312
Phone: 412.355.8382
Fax: 412.355.6501
robert.toth@klgates.com

Respectfully submitted,



Robert J. Toth
Attorney for Applicant
Registration No. 57,741

Customer No. 41,835